

## Abstract of th Disclosure

A dual polarization transmission receiving system includes a reception unit including two RF local oscillators and a demodulation unit. The local oscillators receive signals transmitted by using two  
5 orthogonal polarized waves (V and H polarized waves) and convert the respective received signals into IF (Immediate Frequency) signals. The demodulation unit branches each IF signal into two paths, and then demodulates the respective IF signals for each polarized  
10 wave by a digital coherent detection scheme. The modulation unit for each polarized wave extracts a phase noise component from a demodulated output signal, divides the component into DC and AC components, and suppresses a phase noise amount received from an RF  
15 local oscillator for an orthogonally polarized (different polarized wave) relative to a polarized wave (self polarized wave) as a compensation target in the demodulation unit for each polarized wave by using a phase control signal obtained by interchanging the DC  
20 and AC components between the respective polarized waves.